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August 8, 2007
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:		Miller et al.
Serial No.	:	10/669,116
Filed	:	September 23, 2003
For	:	Implantable Current Collector ID Matrix Identifier
Examiner	:	A. Echelmeyer
Group Art Unit	:	1745

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APPEAL BRIEF UNDER 37 CFR 1.192

Sir:

In response to the Office Action dated June 1, 2007 and the Notice of Panel Decision from Pre-Appeal Brief Review dated July 10, 2007, the Applicants file this Appeal Brief:

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Real Party in Interest

The real party in interest is Greatbatch Ltd., 9645 Wehrle Drive, Clarence, New York 14031.

Related Appeals and Interferences

There are no related appeals and interferences.

Status of Claims

Claims 1, 2, 4, 7 to 17 and 19 to 27 are rejected. There are no other claims on appeal.

Status of Amendments

No amendment has been filed subsequent to the final rejection dated June 1, 2007.

Summary of Claimed Subject Matter

1. An electrical energy storage device, which comprises:

a) a first electrode (page 4, line 28 to page 5, line 1) comprising an electrode active material (page 5, line 24 to page 6, line 23) contacted to a support portion of a current collector (page 4, line 27 to page 5, line 6);

b) a unique identification code (page 7, line 22 to page 8, line 3) etched into an exposed portion of the current collector, wherein the identification code relates to at least one of a weight of the current collector and a gram amount of the electrode active material (page 11, lines 6 to 19);

c) a second, counter electrode (page 11, lines 20 to 26);

d) a separator (page 11, lines 22 to 26) disposed between the first and second electrodes to prevent direct physical contact between them when they are in electrical association with each other (page 12, lines 15 to 17);

e) a casing housing the first and second electrodes (page 12, lines 7 to 10); and

f) a first terminal connected to the current collector of the first electrode and a second, opposite polarity terminal connected to the second electrode (page 12, lines 18 to 22).

13. An implantable medical device powered by an electrochemical cell, the cell comprising:

a) a cathode (page 4, line 28 to page 5, line 1) comprising a current collector (page 5, lines 7 to 9) having a support portion and a tab (page 5, lines 9 and 10), wherein the support portion of the current collector comprises opposed first and second major faces (page 5, lines 16 to 19) contacted with silver vanadium oxide and fluorinated carbon (page 10, line 16 to page 11, line 5), respectively, while the tab remains exposed (Figs. 4 and 5);

b) a unique identification code (page 7, line 22 to page 8, line 3) etched into the current collector tab;

c) an anode (page 11, lines 20 to 26);

d) a separator (page 11, lines 22 to 26) disposed between the cathode and anode to prevent direct physical contact between them when they are in electrical association with each other (page 12, lines 15 to 17);

e) a casing housing the cathode and anode (page 12, lines 7 to 10); and

f) a first terminal connected to the current collector of the cathode and a second, opposite polarity terminal connected to the anode (page 12, lines 18 to 22).

16. A method for providing an electrochemical cell, comprising the steps of:

a) providing a current collector (page 4, line 27 to page 5, line 6) comprising a tab extending from a support portion intended to be contacted by an electrode active material (page 5, lines 7 to 10 and Fig. 5);

b) contacting an electrode active material to the support portion of the current collector while leaving the tab exposed, thereby providing a first electrode (page 6, lines 11 to 23 and Fig. 5);

c) etching a unique identification code into the current collector tab (page 7, line 22 to page 8, line 3 and Fig. 5), wherein the identification code relates to at least one of a weight of the current collector and a gram amount of the electrode active material (page 11, lines 6 to 19 and Fig. 5);

d) providing a second, counter electrode (page 11, lines 20 to 26 and Fig. 5);

e) disposing a separator between the first and second electrodes (page 11, lines 22 to 26) housed inside a casing (page 12, lines 7 to 10) with the current collector of the first electrode connected to a first terminal and the second electrode connected to a second terminal (page 12, lines 18 to 22); and

f) activating the first and second electrodes with an electrolyte filled into the casing (page 12, lines 15 to 17).

Grounds of Rejection to Be Reviewed On Appeal

1. Whether claims 1, 2, 4, 7, 8, 12, 16, 17, 19 to 24, 26 and 27 are unpatentable under 35 USC 103(a) over Lessar et al. (U.S. Patent No. 6,006,133) in view of Miyazaki et al. (U.S. Patent No. 6,315,801) and Merlin et al. (U.S. Patent No. 5,552,574).

2. Whether claims 9 to 11, 13 to 15 and 25 are unpatentable under 35 USC 103(a) over Lessar et al. in view of Miyazuki et al. and Merlin et al. as applied to claims 1 and 7, and further in view of Gan et al. (U.S. Patent No. 6,790,561).

Arguments

1. Claims 1, 2, 4, 7, 8, 12, 16, 17, 19 to 24, 26 and 27 are rejected under 35 USC 103(a) as being unpatentable over Lessar et al. (U.S. Patent No. 6,006,133) in view of Miyazaki et al. (U.S. Patent No. 6,315,801) and Merlin et al. (U.S. Patent No. 5,552,574).

Lessar et al. relates to an implantable medical device powered by a flat electrolytic capacitor. As described at column 8, line 59 to column 9, line 17, one embodiment of the capacitor comprises at least one anode layer having a registration tab extending from a perimeter thereof, at least one cathode layer having a registration tab extending from a perimeter thereof, and registration tabs for connecting anode sub-assemblies or cathode layers in parallel electrically. However, the "registration tabs" extending from the perimeters of the anode and cathode layers are for correct alignment or proper relative positioning. The examiner admits as much in her Final Office Action dated June 1, 2007 when she states in section 3 on page 2 that:

> "The anode and cathode layers have registration tabs extending from their perimeter. . ."
>
> "Lesser et al. fail to teach an identification code on the exposed portion of the current collector."
>
> "Miyazuki et al. teach process control and identification marks formed on the current collector portion of an electrode (abstract; column 4 lines 27-28). The marks are needed to effectively perform manufacturing process and

ensure process control (column 2 lines 58-67; column 3 lines 1-5 and 29-31)."

In that respect, Miyazaki et al. relates to a process for producing an electrode plate with a terminal mounting portion and an identification mark. As discussed at column 6, lines 55 to 63, the process includes "the steps of applying an electrode forming composition composed of at least an active material and a binder on an entire surface of a collector 2 and then drying the same to thereby form an active material layer 3 and forming an exposed surface portion of a terminal mounting portion 4, to which a terminal 104 is mounted by partially peeling off the active material layer 3 from an area substantially corresponding to an area to which a terminal 5 is actually mounted."

Miyazaki et al.'s process can also be used to provide identification marks on a current collector. As shown in Fig. 4, a solidifying agent 7 is heat fused and dropped through a suitable mask 6 on the active material 3. The mask 6 has a negative pattern of a desired pattern and a masking plate corresponding to a position to be impregnated is cut away. Fig. 6 shows where a portion 3a of the active material layer 6, which is impregnated with the solidifying agent, is peeled off and the remaining active material layer 3 forms a pattern of a desired shape. That way, the identification marks are the remaining "active material coating layer itself or a trimmed portion formed by removing the coating layer into the pattern shape, so that the identification mark cannot adversely affect the performance of the battery after the assembly thereof." For support, see column 4, lines 30 to 34.

Thus, at Fig. 7, the identification marks 8 are made "by forming the active material layer 3 in shape of patterns on

the exposed surface of the terminal mounting portion 4" (column 16, lines 15 to 25). Conversely in Fig. 10, the identification marks 8 are a pattern of circular holes or openings in the active material. In any event, the identification marks 8 can either be a pattern of upstanding columns of active material left behind on the terminal mounting portion 4 as shown in the enlarged view of Fig. 14, which is a plan view of Fig. 7, or they can be a pattern of holes devoid of active material as in Fig. 10.

Merlin et al. relates to a method for marking the connector of a chip card, bank card, telephone card, and the like, with a laser. The patented "invention provides for: recognizing identification particulars memorized in said chip; marking said identification particulars on the connector; [and] marking the identification particulars also on the card." As further discussed at column 4, lines 11 to 24 with respect to Fig. 6, "it is possible, by means of sensors 71, 72, to recognize identification particulars to be marked that are recorded electrically in the chip 16 and to transmit them to the microprocessor 60 which, apart from the modulation of the laser L, controls the means 80 for the sweeping of the laser beam 30 along x and y as a function of the particulars received. These identification elements may thus be etched on the metal contacts 12 of the micromodule 10 as well as on the very body of the card 1, thus forming a security means by which the interchanging of the micromodule 10 and the card 1 can be avoided."

Returning back to Miyazuki et al., this patent at column 2, line 58 to column 3, line 15 discusses mass production of electrodes for secondary batteries. Miyazuki et al. state that such electrodes include:

"a coating process to prepare an electrode plate having a wide width, and thereafter, through pressing, slit-forming, cutting, group winding, etc. processes. A secondary battery is produced by using such electrode plate through various assembling processes. In order to effectively perform these processes with high accuracy, it is available to apply process control marks, cutting marks, position alignment marks and the like mark to the electrode plate and also apply various identification marks or symbols such as manufacture lot numbers, bar-codes and the like for easy identification and manufacture control of the electrode plate. However, the marking of such identification marks with a printing ink or the like increases the manufacturing step, and in addition to this defect, there involves a problem such that the printing ink marking the identification mark is dissolved in an electrolyte in a battery after the assembling thereof, which adversely affects on the performance of the battery. Because of this problem, it is difficult to properly select the printing ink to be used, and accordingly, the application of the identification marks was practically impossible, the process control or management for the battery manufacturing was made complicated and not effective, defective occurred frequently, and manufacturing cost was increased."

In referring to printed ink identification marks, Miyazaki et al. use such adjectives as "defect", "problem",

"adversely affects", "practically impossible", "complicated", "not effective" and "defective". They could hardly have been more negative in their assessment. Against that backdrop, Miyazaki et al. teach their invention as a marked improvement that suffers from none of the dilatory effects of the prior art at the time of their invention, namely, use of printing inks as identification marks for the current collector of an electrochemical cell. The main reason for Miyazuki et al.'s invention is that inks are electrically inactive foreign materials that had not been shown to be stable enough once applied to merit inclusion into a cell environment. As a "contaminant", they can dissolve into the electrolyte to detrimentally impact cell performance.

This, of course, raises the follow-on question as to what motivation one skilled in the art would have had to further improve Miyazuki et al. to thereby look to Merlin et al. and, consequently, arrive at the applicants' claimed invention. The applicants do not believe any such motivation would have existed. In other words, Miyazuki et al. is the improvement over then known techniques of introducing a foreign material into the cell for the sole purpose of providing identification marks. It is not in need of further refinement, unless one is cognizant of the applicants' claimed invention from a hindsight perspective.

The examiner, of course, holds a contrary view which she stated in her Response to Arguments section in the June 1, 2007 office action beginning at the bottom of page 13 and continuing onto page 14. There she states that:

> "[o]n page 13 of the remarks, Applicants state that there is no motivation within Miyazuki et al. to improve the marks by etching them: 'In other

> words, the Miyazuki et al. invention is complete and functional in and of itself and not one needing to be 'improved'.' Most modern inventions are made by improving an existing invention that previous (sp) may not have been believed to need improvement. Take, for example, a car. It is likely that Henry Ford believed that his Model T cars did not need improvement, but one need only sit in a car to see the many inventions that have improved cars, such as seatbelts or antilock brakes. The argument that an existing invention does not need further improvement goes against the whole purpose of invention."

The implication in this statement is that most everything can be improved including cars in the examiner's example and electrochemical cells in the instant application. The applicants did not mean to imply in their prior amendment that Miyazuki et al.'s cell could not be improved. Instead, it is that one skilled in the art at the time of the present invention having the benefit of Miyazuki et al. would not have been motivated to look to Merlin et al. to arrive at their claims. Simply, the examiner has not identified a reason why Miyazuki et al.'s invention needed to be improved to arrive at Merlin et al.

Looking at that a little more closely, there seems to be several reasons for that lack of connection between the cited references. Foremost, there is no indication that Miyazuki et al.'s solution was ineffective. From every indication it worked just fine and was in no need of further refinement. Just as important, however, is that Merlin et al.'s etching, while not encompassing the introduction of a "foreign"

material into the cell as with a printing ink, is merely manipulation of an already existing cell component - the current collector. Even though it is not an "active" material in the sense of an anode and a cathode active material, the current collector is a required cell component. So, Merlin et al.'s invention is redundant to Miyazaki et al.'s improvement in that it is another means of manipulating an already existing cell component for the purpose of providing an identification mark. Why do that when Miyazaki et al.'s identification marks are functioning perfectly well?

In that light, with her argument regarding Henry Ford and his Model T cars, the examiner has completely missed the point. Of course cars have been improved and many of those improvements have been patented. This includes seatbelts and antilock breaks. However, the issue is not whether cars have been the subject of improvements since the time of Henry Ford, but rather when any one of the arguably numerous improvements were more than insignificant modifications to then existing technology and thereby met the criteria for a patent, was such protection justified? Certainly seatbelts and anti-lock breaks were of a significant nature and when first invented worthy of protection. In a similar vein, the prior art has been improved by the claimed invention, unaided by the cited combination of patent references, and is also worthy of patent protection.

Accordingly, independent claims 1 and 16 are patentable over this combination of patent references. Claims 2, 4, 7, 8, 12, 17, 19 to 24, 26 and 27 are allowable as hinging from patentable base claims.

2. Claims 9 to 11, 13 to 15 and 25 are rejected under 35 USC 103(a) as being unpatentable over Lessar et al. in view of Miyazuki et al. and Merlin et al. as applied to claims 1 and 7 above, and further in view of Gan et al. (U.S. Patent No. 6,790,561).

The Lessar et al., Miyazuki et al. and Merlin et al. patents have been thoroughly discussed in section 1 above. Gan et al. relates to an electrode of the configuration: SVO/current collector/CF_x/current collector/SVO. However, the Gan et al. reference lacks any recognition that it is useful in a cell construction to provide a current collector for an electrode with a unique identification code.

In that respect, independent claim 13 contains similar patentable aspects as independent claims 1 and 16 discussed above. This means that claims 9 to 11 and 15 to 25 are likewise allowable as hinging from patentable base claims.

Claims Appendix

1. An electrical energy storage device, which comprises:
   a) a first electrode comprising an electrode active material contacted to a support portion of a current collector;
   b) a unique identification code etched into an exposed portion of the current collector, wherein the identification code relates to at least one of a weight of the current collector and a gram amount of the electrode active material;
   c) a second, counter electrode;
   d) a separator disposed between the first and second electrodes to prevent direct physical contact between them when they are in electrical association with each other;
   e) a casing housing the first and second electrodes; and
   f) a first terminal connected to the current collector of the first electrode and a second, opposite polarity terminal connected to the second electrode.

2. The electrical energy storage device of claim 1 wherein the unique identification code is etched into a current collector tab.

4. The electrical energy storage device of claim 1 wherein the unique identification code designates at least a cell serial number.

7. The electrical energy storage device of claim 1 wherein the support portion of the current collector comprises opposed first and second major faces and wherein a first electrode active material contacts the first major face and a second electrode active material contacts the second major face.

8. The electrical energy storage device of claim 7 wherein the first and second electrode active materials are each within about ±0.005 grams of a desired weight.

9. The electrical energy storage device of claim 7 wherein the first electrode is a cathode with silver vanadium oxide and fluorinated carbon contacted to the opposed first and second major faces of the current collector to provide the configuration: silver vanadium oxide/current collector/fluorinated carbon.

10. The electrical energy storage device of claim 7 wherein the first electrode is a cathode comprising two current collectors, each having first and second major faces with exposed tabs provided with unique identification codes and wherein the cathode has the configuration: silver vanadium oxide/current collector/fluorinated carbon/current collector/silver vanadium oxide.

11. The electrical energy storage device of claim 7 wherein the current collector comprises wing sections connected together by a tab and wherein each wing section has opposed first and second major faces contacted with an electrode active material.

12. The electrical energy storage device of claim 1 selected from the group consisting of a prismatic electrochemical cell, a jellyroll electrochemical cell, a button-type cell, a coin-cell, an electrochemical capacitor, an electrolyte capacitor, and a hybrid capacitor.

13. An implantable medical device powered by an electrochemical cell, the cell comprising:

a) a cathode comprising a current collector having a support portion and a tab, wherein the support portion of the current collector comprises opposed first and second major faces contacted with silver vanadium oxide and fluorinated carbon, respectively, while the tab remains exposed;

b) a unique identification code etched into the current collector tab;

c) an anode;

d) a separator disposed between the cathode and anode to prevent direct physical contact between them when they are in electrical association with each other;

e) a casing housing the cathode and anode; and

f) a first terminal connected to the current collector of the cathode and a second, opposite polarity terminal connected to the anode.

14. The implantable medical device of claim 13 wherein the unique identification code relates to the weight of the current collector and to the gram amounts of silver vanadium oxide and fluorinated carbon contacted to the opposed first and second major faces of the current collector support portion.

15. The implantable medical device of claim 13 selected from the group consisting of an automatic implantable cardioverter defibrillator, a cardiac pacemaker, neurostimulator, a drug pump, a bone growth stimulator, and a hearing assist device.

16. A method for providing an electrochemical cell, comprising the steps of:

a) providing a current collector comprising a tab extending from a support portion intended to be contacted by an electrode active material;

b) contacting an electrode active material to the support portion of the current collector while leaving the tab exposed, thereby providing a first electrode;

c) etching a unique identification code into the current collector tab, wherein the identification code relates to at least one of a weight of the current collector and a gram amount of the electrode active material;

d) providing a second, counter electrode;

e) disposing a separator between the first and second electrodes housed inside a casing with the current collector of the first electrode connected to a first terminal and the second electrode connected to a second terminal; and

f) activating the first and second electrodes with an electrolyte filled into the casing.

17. The method of claim 16 including providing the unique identification code on the current collector tab comprising a model number and a unique serial number.

19. The method of claim 16 including providing the support portion of the current collector comprising opposed first and second major faces with a first electrode active material contacted to the first major face and a second electrode active material contacted to the second major face.

20. The method of claim 19 including scanning the unique identification code provided on the current collector tab and recording the associated weights for the current collector, the first electrode active material and the second electrode active material prior to housing the first electrode in electrical association with the second electrode inside the casing.

21. The method of claim 16 including providing the casing with a case identification code.

22. The method of claim 21 including scanning the case identification code and recording the associated weights for the current collector, the first electrode active material and the second electrode active material housed therein.

23. The method of claim 16 including providing the first and second active materials being within ±0.005 grams of a desired weight and the current collector being within ±0.006 grams of a desired weight.

24. The electrical energy storage device of claim 1 wherein the current collector is selected from the group consisting of titanium, molybdenum, tantalum, niobium, cobalt, nickel, stainless steel, tungsten, platinum, palladium, gold, silver, copper, chromium, vanadium, aluminum, zirconium, hafnium, zinc, iron, and alloys thereof.

25. The implantable medical device of claim 13 wherein the current collector is selected from the group consisting of titanium, molybdenum, tantalum, niobium, cobalt, nickel, stainless steel, tungsten, platinum, palladium, gold, silver, copper, chromium, vanadium, aluminum, zirconium, hafnium, zinc, iron, and alloys thereof.

26. The method of claim 16 including laser etching the identification code into the current collector tab.

27. The method of claim 16 including selecting the current collector from the group consisting of titanium, molybdenum, tantalum, niobium, cobalt, nickel, stainless steel, tungsten, platinum, palladium, gold, silver, copper, chromium, vanadium, aluminum, zirconium, hafnium, zinc, iron, and alloys thereof.

Evidence Appendix

There is no evidence submitted pursuant to Sections 1.130, 1.131 and 1.132 of the Codified Patent Rules.

Related Proceeding Appendix

There are no related proceedings.

Respectfully submitted,

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